Water Resources Research Center
Environmental Center

UNIVERSITY of HAWAI'I
MĀNOA

February 6, 2009
RE: 0784

Wayne Yoshioka
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd floor
Honolulu, HI 96813

Dear Mr. Yoshioka:

Draft Environmental Impact Statement
Honolulu High-Capacity Transit Corridor Project
Honolulu and Ewa, Oahu

City and County of Honolulu, Department of Transportation Services proposes to construct a high-capacity rail system between East Kapolei and Ala Moana Center. The Draft Environmental Impact Statement includes a No Build and 3 Build Alternatives. The Build Alternatives would involve between 19 and 25 miles of elevated guideway and would include transit stations, a maintenance and storage facility, and park-and-ride facilities.

This review was conducted with the assistance of Karl Kim, UHM Urban and Regional Planning; Panos Prevedouros, UHM Civil and Environmental Engineering; Evelyn Cox, UHWO Biology; and Ryan Riddle, Environmental Center.

General Comments

We feel that the DEIS does not adequately capture the full range of costs and benefits associated with the proposed project. It appears to focus too narrowly on transportation elements rather than on the full range of social, environmental, and economic benefits and costs associated with the proposed project. While travel time savings are indeed an important potential aspect of the project, so too are other factors such as mobility, access, energy use, and economic issues. The DEIS also fails to adequately incorporate concepts of sustainability especially as it applies to project design.

In addition to our general comments we also have several specific comments.

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Alternatives Considered (pp. S-2 – S-4)

The project calls for an elevated guideway. The benefits of this system compared to an at-grade system have not been sufficiently demonstrated. How much additional performance in terms of reduction in travel time is achieved by elevation compared to signal prioritization and other operating procedures that could be implemented with an at-grade system?

The benefits of being on the ground, up close to activity generators compared to proposed elevated stations in the middle of roadways have not been demonstrated. There is insufficient discussion of the benefits of an exclusive right-of-way and automation over an at-grade system operated by drivers. How do the labor savings associated with a fully automated system compare with the capital and environmental costs of building an elevated concrete structure?

The documents do not sufficiently describe the operating characteristics of the system vis-à-vis other competing technologies in terms of performance, convenience, and trip quality. If instead of building an expensive elevated transit system in which billions are spent on concrete structures, what if a comparable level of spending was on buses, at-grade light rail, and improvements to the energy grid? Given the unreliability of Oahu's electric system and the two recent islandwide blackouts, more attention should go towards design of a more appropriate system given apparent limitations in the present electrical infrastructure.

DEIS Base Travel Times (p. 1-5)

One of our faculty reviewers offered this anecdote questioning the DEIS' given vehicular travel time of 89 minutes from Kapolei to Downtown:

> *Having resided in Kapolei for a short period if 2007, I know from personal experience that the morning peak period travel time from Kapolei to downtown is always under 75 minutes in the absence of rain or any lane closure. I was startled that the DEIS uses a time of 89 minutes.*

In a non scientific survey of people listening in to a radio program some measurements of travel time from the H-1 freeway to Alakea Street in downtown if they depart Kapolei between 6 AM and 7 AM were discussed. The average time of the callers was about 60 minutes. Therefore, roughly speaking the DEIS may be using a 50% overestimate of the travel time which leads to false benefits of travel times by rail.

The DEIS fails to demonstrate the root causes of traffic congestion. The real issue is traffic flow conditions on Nimitz Highway which varies widely as these travel times show: 11, 16 or 18 minutes with good conditions, 25, 30 or 41 minutes with poor conditions. This makes it clear that a roughly two mile long Nimitz Viaduct will provide a consistent travel time from airport-to-Alakea of about 6 minutes, reducing the peak hour trip from Kapolei to downtown from about 60 minutes to about 40 minutes. A relatively modest investment solves a huge part of the morning commute congestion.

Note that rail will be providing airport-to-Alakea transit travel time of about 50 to 54 minutes depending on the route selected. The airport route provides the longest travel time for this origin-destination pair while the Salt Lake route a little shorter.

Alternatives and Technologies Considered but Rejected (p. 2-7)

The DEIS is inaccurate in claiming that OMPO rejected the Pearl Harbor Tunnel. The UH Congestion Study found that this alternative has substantial traffic benefits at a cost comparable to that of the rail. There has been no substantiation to the tunnel's alleged costs between 7and 11 billion dollars.

Methodology (pp. 3-2 – 3-3)

The Synchro 6.0 software suite was used for intersection analysis. Synchro applied the HCM Operational Analysis methodology and intersection input data to estimate control delay at each study intersection. This traffic analysis method is not suitable for saturated conditions, and is not suitable for corridor and regional studies. HCM mentions these limitations. Almost all traffic elements along this corridor are oversaturated, thus HCM methodologies do not apply (unless the wrong data are used and degrees of saturation are low). Either way the output is wrong or misleading.

Future Conditions and Effects: No Build Alternative (p. 3-16)

On page 3-16 the DEIS states, "Even with $3 billion in roadway improvements under the No Build Alternative, traffic delay in 2030 would increase by 44%". If one was to correctly model all the committed congestion relief projects in the Oahu Regional Transportation Plan 2030 and combine them with the fact that Oahu's population has been stagnant or falling (and bound to further fall due to the poor economy and housing prices), the highway congestion in 2030 could improve by at least 15%.

For example, the PM zipper alone will carry about 1,500 vehicles per hour through the Kalauao screenline with three or more people in them thus resulting in a person capacity of 4,500 going west. These are individuals removed from the existing network thus providing substantial traffic relief. The westbound utilization of the rail will be optimistically 6,000 people through the Kalauao screenline of whom at most half will be drivers and ex-carpoolers or 3,000 people. The PM zipper combined with a Nimitz flyover can potentially result in a continuous trip at 55 miles per hour from Iwilei to Waikele to Kapolei. This commute is half as long in duration as that by rail. Therefore the PM zipper lane can potentially be more beneficial. However, the DEIS tries to convince us that major traffic congestion relief projects will not yield much relief whereas the rail with its inferior speed and 15+ stops to Kapolei will yield superior travel time savings and traffic congestion improvements. Part of the reason is likely that planning models are insensitive to bottlenecks and only provide rough estimates based on some assumed values of capacity. One of our reviewers asserts that a regional microsimulation traffic model assessing the impacts with and without correctly modeled ORTP 2030 projects is needed to assess the benefits of the projects in Table 2-3 of the DEIS.

Transit Ridership (p. 3-26 – 3-34)

The description of patronage estimates for the system is weak. There is insufficient detail to adequately review and validate the estimates for ridership. Given advances in ridership forecasting and spatial analysis of trip origins and destinations, more disaggregate level information should have been provided. While the underlying model seems appropriate for regional highway planning, it seems less appropriate for analyzing a specific transit corridor or for estimating the demand for rail transit in specific neighborhoods or associated with individual stations. In particular, the travel behavior of pedestrians and those making shorter urban trips does not appear to be adequately captured. More attention should be given to public transit users. The forecasting method relies too heavily on out-dated population estimates and doesn't incorporate more recent changes in growth, development, and economic conditions. Additionally, there isn't sufficient distinction by trip purpose, nor adequate modeling of induced trips or behavioral changes associated with the construction of the system.

Specific improvements for the transit-dependent or households without access to private automobiles should be described as well as the station-by-station improvement in services for the elderly or persons with disabilities. The benefits or changes in level of transportation services for low income as well as other environmental justice populations should also be evaluated at the neighborhood or TAZ level. Many of the maps and displays lack sufficient detail in order to evaluate neighborhood or community-level impacts.

The increase in ridership related to transit oriented development should also be addressed. Efforts to validate the ridership forecasts should be described as well as an assessment of not just data quality, accuracy, and reliability but also assumptions regarding growth and development in the corridor served by the proposed transit system. The robustness of patronage estimates given changes in fuel prices, economic growth, employment, and other trip-making activities are not adequately demonstrated.

A related area of concern is the impacts of the system on bus ridership and service to communities in outlying areas. The extent to which the bus system will support and feed riders to the rail system should be described as well as the changes in service for all transit patrons. To what extent will there be duplicate bus and rail service?

Effects on Parking, Bicycle and Pedestrian Facilities, and Freight (pp. 3-41 – 3-44)

The analysis of transportation impacts fails to adequately cover the relationship between increased and improved rail services and changes in the level and distribution of bicycle, pedestrian and other trips. While some mention was made of improvements to pedestrian facilities, the effects of these investments on pedestrian tripmaking behavior aren't described. A more complete discussion of non-motorized travel demand and its relationship to improved transit services should have been included.

Environmental Analysis, Consequences and Mitigation (p. 4-1 – 4-175)

The benefits of the proposed system in terms of reduced air pollution, greenhouse gas emissions and dependency on fossil fuels have not been adequately described. The estimates of transportation impacts should have been related to both local greenhouse gas inventories and carbon budgets. The transit system has the potential of significantly affecting not just emissions but also patterns of local development that in turn shape land use, development, and travel behavior.

The environmental benefits of taking cars off the road have not been sufficiently quantified. It's not just the reduction in traffic, but also other costs (parking, repair and maintenance, safety, etc.) that should be quantified. The reduction in non-point source pollution associated with automobile use as well as the decreased disposal costs associated with motor vehicles might also have been described.

Environmental impacts associated with the proposed project were also inadequately described – namely the impacts associated with the production of concrete and the construction of an elevated system. A life-cycle approach to estimating environmental impacts over time for the various components of the system as well as alternatives should have been provided.

In regards to energy expenditure, a more thorough discussion of energy usage should be provided. Estimates of the per vehicle, per trip energy requirements of the proposed system compared to alternative travel modes (bus, private auto, etc.) should have been provided.

The DEIS should also discuss the potential public health benefits associated with public transit such as increased access to health facilities and a reduction in motor vehicle accidents.

Land Use (pp. 4-10 – 4-18)

Changes in the density of development associated with the proposed project should be discussed in the DEIS as well as the potential for reducing suburban sprawl and the preservation of green space, farmland, and areas for carbon sequestration.

Economic Activity (pp. 4-23 – 4-22)

The economic value of the project in terms of stimulus to the economy is not sufficiently described. What share of the total project costs can be provided with local factors of production versus imported labor, capital, materials and supplies? Are there adequate construction support facilities for a project of this magnitude? Where will the concrete come from? What will be the effect of this project on other planned capital projects in both the public and private sector? How does this project relate to other planned transportation projects on Oahu such as improvements to Nimitz Highway and other large-scale construction projects? While there is currently an economic slowdown, what will be the economic conditions at the time of construction and during the duration of the project? Better economic data for the planning, construction and operating phases of the project should be provided.

More current information regarding key indicators of economic performance for Honolulu should be provided as well as the effects of a large construction project on the local economy. Which economic sectors are likely to be affected? To what extent will proceeds from the project generate local versus off-island returns? How much will local businesses benefit from the project? How much new labor will need to be imported into the state? What is the local and regional impact of the project in terms of income, job creation, wages, inflation, and economic welfare for residents?

Energy and Electric and Magnetic Fields (pp. 4-107 – 4-109)

The adequacy of the electricity system to support this project should be more fully demonstrated in terms of generation, transmission, and distribution issues. Development of a "smart grid" as well as opportunities for renewable energy (solar, wind, etc.) that make use of stations, guideway structures and other elements of the system should also have been included.

Maintenance and Storage Facility (pp. 4-151 – 4-152)

The rail yard is located several miles inland with no direct access to the harbors. The DEIS is silent as to how rail cars and rail equipment will be transported there since rail cars do not fit on regular flatbed trucks and even if they can be accommodated by length and by weight on custom flatbeds, they do not fit by height due to the existence of several overpasses along the freeway. What are the logistics and costs of this significant part of construction?

Cash Flow Analysis (pp. 6-7 – 6-11)

The proposal appears to be based on overly optimistic forecasts of economic growth and general excise and use tax (GET) receipts. Efforts to capture federal economic stimulus funding should be included. More details on factors influencing the availability and likelihood of federal aid should be provided. Changes in the tax base due to increased investment and construction of capital facilities such as stations and other improvements should also be described. The impact of increased access to improved transportation services on commercial and residential property values and the resulting increases in tax revenues should also be included. The potential for tax increment financing, improvement or benefit districts or other strategies for value capture should also be described. More discussion of fare policy should also be included in the DEIS. The cross-elasticity of transit fares as a function of changes in other transportation costs (bus, private automobile, etc.) should also be provided. A more coherent description of farebox revenues in the short-term as well as over the life of the project alongside articulation of transit fare policies should be provided.

The project's cash flow analysis anticipates the use of local funds for the first construction phase and a combination of local and federal funds for the remaining phases. The project should not begin until the full extent of federal funding is known in writing as part of the next Transportation Act of Congress. Additionally, the project should not start until a substantial portion of the federal funding (e.g., a portion that covers half of the cost of the first construction phase) has been actually released for the project.

Rail Travel Time Discrepancies

The DEIS clearly specifies that Kapolei-to-downtown travel time by rail is 50 to 54 minutes. This travel time estimate was clearly known in August 2008. Yet in September 2008 the City mailed all residents a large eight-page brochure the centerfold of which states that Kapolei to Ala Moana Center by rail will be 40 minutes. Why the discrepancy in figures?

Rail Extension

A Supplemental DEIS is needed to address the route beyond Ala Moana Center as the public's understanding of the project is of a rail system from Kapolei to UH with service to Waikiki. A Supplemental DEIS is required to assess the impacts for the whole corridor.

Two related observations from the supplementary report "Transportation Technical Report, Honolulu High-Capacity Transit Corridor are as follows:

> Figure 3-29 shows that rail line overflies the freeway near the University of Hawaii. This is a scenario that the city vigorously disclaimed in the September to November 2008 time frame but then it presents it in official documents.
>
> The Ala Moana Center station arrangement is a mystery. In the 20-mile plan, the station is approximately at the 3rd floor level. In the 30-mile plan the station is approximately at the 6th floor level. What is the exact plan for the Ala Moana Station and how can the guideway expand past the Ala Moana Center given the density, and height of buildings along Kona Street and Atkinson Drive? One reviewer suspects that roughly half a billion dollars would need to be expended to reconfigure (that is, to demolish and reconstruct)

the guideway alignment between Pensacola Street and Atkinson Drive, including the demolition of the 3rd floor station and the creation of a 6th floor station, if rail has any hope in reaching UH-Manoa or Waikiki via Kona Street.

TOD Potential

What is the impact of station generated traffic, noise and pollution to Transportation Oriented Development (TOD) potential and TOD plans? Where is the discussion and assessment?

Peak Hour Screenline Level-Of-Service Methodology

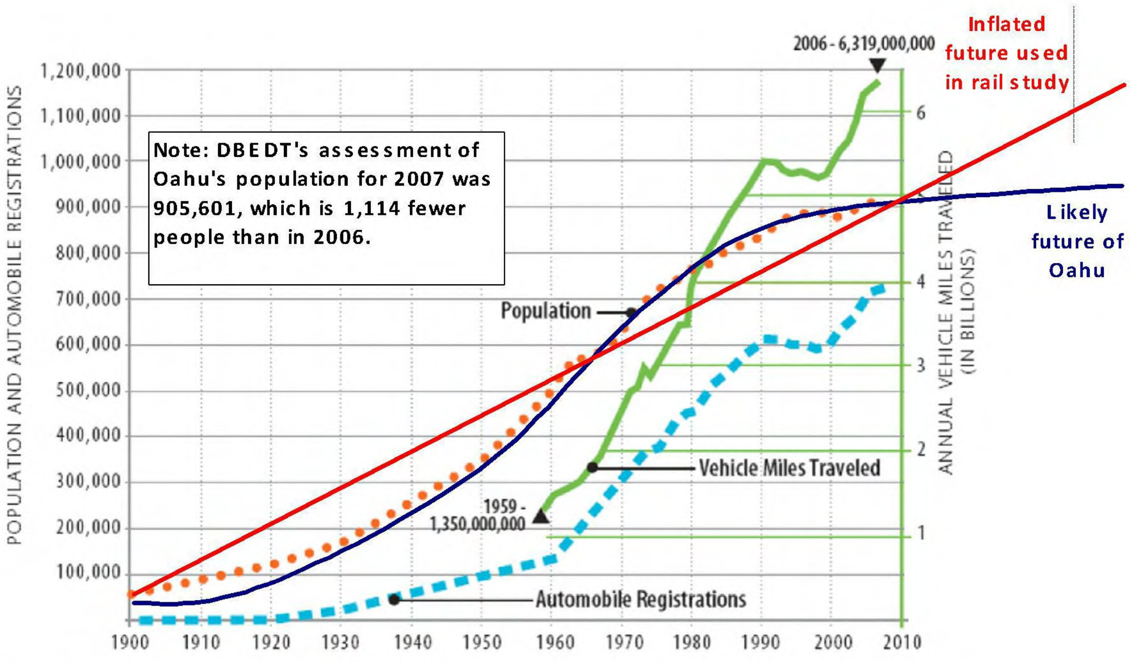
In the Transportation Technical Report the peak hour screenline level-of-service methodology is described. The DEIS states, "To measure and describe the local roadway network's operational status, an LOS grading system was developed to describe a facility's operation, ranging from LOS A (free-flow traffic conditions with little or no delay) to LOS F (over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays). The operation of the roadway segments was calculated by comparing traffic volumes on roadway facilities to the saturated volume LOS thresholds for each individual facility. The LOS is reported for each individual screenline facility, then weighted by traffic volumes to report overall operating conditions across each screenline."

This is an ad hoc method that is not a national standard. It is not appropriate to use the Highway Capacity Manual's LOS measure without using the HCM methodology. The HCM LOS for freeway screenlines is based on density and speed not on volume-to-capacity ratio. Furthermore, the volume to capacity "method" in the DEIS was wrongly applied in the Alternatives Analysis. The table below shows that general purpose traffic was estimated to be 31% above capacity (estimate of 1.31) but by their numbers, the correct estimate is 62.5% over capacity (estimate of 1.625.) Capacities are not revealed everywhere in the DEIS, so the reviewer cannot check the same calculations in the DEIS.

AA Table 3-12 Kalauao Stream Koko Head bound	2030 Rail 20-mile Alignment Kapolei to Ala Moana Center					
	Revised Facility Capacity	Forecast Volume (vph)	Volume/ Capacity Ratio-AA	LOS	Correct volume/ capacity estimates	
H-1 Fwy	9,500	17,209	1.811	F		
H-1 Fwy (HOV)1	1,900	2,740	1.442	F		
H-1 Fwy (Zipper) 1	1,900	2,241	1.179	F		
Moanalua Rd	1,700	853	0.502	A		
Kamehameha Hwy	3,450	3,059	0.887	D		
Managed Lane						
Total General Purpose Traffic	**14,650**	**21,121**	**1.310**	F	**1.625**	**24%**
Total HOV Traffic	**3,800**	**4,981**	**1.310**	F	**1.324**	**1%**
		26102				

DEIS (from Technical Report Appendix C Table C-3) Kalauao Stream Koko Head bound	2030 with First Project Salt Lake Option				
	2030 Facility Capacity DEIS	Forecast Volume (vph)	Volume/ Capacity Ratio-2	LOS	Correct volume/ capacity estimates
H-1 Fwy	9,500	12,170	1.281	F	
H-1 Fwy (HOV)1	1,900	1,640	0.863	E	
H-1 Fwy (Zipper) 1	1,900	1,460	0.768	D	
Moanalua Rd	1,700	1,290	0.759	D	
Kamehameha Hwy	3,450	2,350	0.681	E	
Managed Lanes					
Total General Purpose Traffic	**14,650**	**15,810**	**1.08**		**1.149**
Total HOV Traffic	**3,800**	**3,100**	**0.82**		**0.819**
		18910 **28%**			

errors



Source: City and County of Honolulu Department of Business, Economic Development and Tourism, 2007.

Figure 3-1: Historic Trends in Population, Vehicle Ownership, and Vehicle Miles Traveled for O'ahu

Thank you for the opportunity to review this Draft EIS.

Sincerely,

Peter Rappa
Environmental Review Coordinator

cc: OEQC
Karl Kim
Panos Prevedouros
Evelyn Cox
Ryan Mielke, UHWO
James Moncur, WRRC
Ryan Riddle